

REMARKS

Claims 1, 3-5, and 8-20 stand rejected variously under 35 U.S.C. §102(b) and 35 U.S.C. §103(a) as being anticipated by or unpatentable over references including Knapp et al, Hornby, French, Coldren, and Schatz. The Examiner's astute review, and exceptional search skill in correctly locating the present documents, is most appreciated. The references and remarks thereto have facilitated the amendments herein above. In view of the above amendment and following remarks, the Examiner is respectfully requested to reconsider the outstanding objections and rejections and allow the present application to issue.


Independent claims 1 and 12 have been modified to more clearly recite the features found more obtusely in original claims 11 and 14. Support for these new and more clear and distinct recitations may be found, as one particular example, on page 15, lines 9-15, which recites: "The varying components may be visually identifiable as having a specific characteristic, and such identifiers are contemplated herein. For example, a set of components designed to deliver a particular performance characteristic may be designated either by special colorings, unique markings, or even unique shapes where such shapes do not otherwise interfere with performance. Whether different components are paired by common indicia, or whether the indicia only relates to a single component type will be determined by the designer in accord with the teachings of the present invention." The Examiner will recognize that tiny, visually indiscernible changes to the internal components of a fuel injector will have very substantial changes to the performance of the engine. Alteration measured at less than one-thousandth of an inch for critical dimensions of components such as the flow disk, valve seat, and spring will result in major performance changes. Yet the diameter of a typical hair is two to three thousandths of an inch. So changes substantially smaller than a human hair will have major changes to the performance of an engine. These changes just are not visually discernable. As a result, it has heretofore been impractical to maintain a variety of components in the field, since the likelihood that such components would become mixed and confused has been too great. Any accidental mixing of components would in

turn result in poor engine performance, the cause which would be nearly impossible to diagnose in the field. In other words, a vehicle using prior art injectors would easily accidentally be disabled if components were varied. In the present invention, using indicia such as color to identify performance characteristics, an engine may very simply and quickly be field tuned, without the risk of mistaking a part having one characteristic for another. The need for a system such as is found in the present invention is particularly felt in racing, for which the present invention was devised, when weather conditions, fuel, altitude and many other variables may undesirably alter the performance of the vehicle, and where any loss of performance is critical. The grouping of several components by one common indicia even further facilitates field replacement.

New claim 22 is original claims 1, 4, and 10, with the further addition of the words "parallel to and adjacent to" in the phrase: "said longitudinal fuel flow passages separate from, parallel to and adjacent to said longitudinally extensive internal needle passage". These flow passages are illustrated at 251 in Figure 4, and ensure the proper flow of fuel regardless of the type or diameter of needle 240 used. Similar passages were not identified in the prior art of record.

Consequently, in view of the present amendment and remarks, the Examiner is respectfully requested to reconsider the rejection of record and allow the present application to issue. No new matter is introduced. However, should there remain any open issues in this application which might be resolved by telephone, the Examiner is respectfully requested to call the undersigned at 320-363-7296 to further discuss the advancement of this application. Please charge all fees associated with this correspondence to deposit account 17-0155.

Sincerely,

  
Albert W. Watkins  
reg. 31,676